Amendments to the Claims

1. (Canceled)

2. (Canceled)

3. (Canceled)

4. (Canceled)

5. (Previously presented) A method for cleaning a surface within a vessel, the vessel having a wall with an aperture therein, the method comprising:

introducing fuel and oxidizer to a conduit, the introducing comprising:

introducing a first fuel and a first oxidizer forming a first fuel/oxidizer mixture; and

introducing a second fuel and a second oxidizer forming a second fuel/oxidizer mixture, the second mixture being less detonable than the first fuel/oxidizer mixture;

initiating a reaction of the fuel and oxidizer so as to cause a shock wave to impinge upon the surface; and

introducing a pressurized purge gas to the conduit.

6. (Original) The method of claim 5 performed in a repeated sequential way.

7. (Original) The method of claim 5 wherein:

the reaction comprises a deflagration-to-detonation transition.

8. (Original) The method of claim 5 wherein:

the purge gas comprises in major portion air.

9. (Original) The method of claim 5 wherein:

the purge gas is introduced through a purge gas port in an upstreammost 20% of a flowpath length within the conduit.

10. (Canceled)

11. (Previously presented) The method of claim 5 wherein:
the second oxidizer is less oxygen-rich than the first oxidizer; and
the second fuel/oxidizer mixture is introduced as a mixture.

12. (Previously presented) The method of claim 5 wherein:
the second fuel/oxidizer mixture provides a slower reaction chemistry than a reaction chemistry of the first fuel/oxidizer mixture.

13. (Previously presented) The method of claim 5 wherein:
a major portion of said first fuel/oxidizer mixture is provided before a major portion of said second fuel/oxidizer mixture is provided.

14. (Previously presented) The method of claim 5 wherein:
a major portion of said first fuel/oxidizer mixture is provided after a major portion of said second fuel/oxidizer mixture is provided.

15. (Canceled)

16. (Canceled)

17. (Previously presented) The method of claim 5 wherein:
the vessel is a coal- or oil-fired furnace.

18. (Previously presented) The method of claim 5 wherein:
the surface is of a tube bundle.

19. (Previously presented) The method of claim 5 wherein:
a baseline flow of the purge gas is maintained between charge/discharge cycles of the

conduit so as to prevent gas and particulate from the vessel from infiltrating upstream and to assist in cooling of the conduit.

20. (Currently amended) A method for cleaning a surface within a vessel, the vessel having a wall with an aperture therein, the method comprising:

introducing fuel and oxidizer to a conduit, the introducing comprising:

introducing a first fuel and a first oxidizer forming a first fuel/oxidizer mixture; and

introducing a second fuel and a second oxidizer forming a second fuel/oxidizer mixture, the second mixture being less detonable than the first mixture; and

initiating a reaction of the fuel and oxidizer so as to cause a shock wave to impinge upon the surface.

21. (Currently amended) The method of claim 20 wherein:

said introducing the first fuel and the first oxidizer is through one or more associated first ports;

said introducing the second fuel and the second oxidizer is through one or more associated second ports; and

said introducing the first fuel and the first oxidizer fills a volume of the conduit extending beyond the second ~~ports~~ ports.

22. (Previously presented) The method of claim 20 wherein:

said volume is 1-20% of a total volume of the conduit.

23. (Previously presented) A method for cleaning a surface within a vessel, the vessel having a wall with an aperture therein, the method comprising:

introducing fuel and oxidizer to a conduit, the conduit having an upstream end and a downstream end, the introducing forming:

a first mixture of a first fuel and a first oxidizer ; and

a second mixture of a second fuel and a second oxidizer, the second mixture being

downstream of the first mixture and less detonable than the first mixture; and

initiating a reaction of the fuel and oxidizer so as to cause a shock wave to impinge upon the surface.

24. (Previously presented) The method of claim 23 wherein:

the second oxidizer is less oxygen-rich than the first oxidizer; and

the first fuel and second fuel are the same.

25. (Previously presented) The method of claim 23 wherein:

the fuel and oxidizer fill 100% of the conduit.

26. (New) The method of claim 20 wherein:

said introducing the first fuel and the first oxidizer is through one or more associated first ports; and

said introducing the second fuel and the second oxidizer is through one or more associated second ports, downstream of the first ports.